School of Liberal Arts

MATH 060
Advanced Algebra and Trigonometry
Winter 2023 (202202)

3 Credits

Course Outline

INSTRUCTOR	Robert Ferro	OFFICE HOURS	TBA
OFFICE	A2303a	**CLASSROOM**	T1083
E-MAIL	rferro@yukonu.ca	**CLASS TIME**	Mon to Fri, Jan 4 to Apr 19, 8:30-9:55 am. Final exam Apr 24.
TELEPHONE	867.668.8841	**CRN**	20083
Liberal Arts office: Ayamdigut Campus A2501, liberalarts@yukonu.ca, 867-668-8770			

COURSE DESCRIPTION

Advanced Algebra and Trigonometry reviews basic concepts of algebra and teaches equations, inequalities, problem solving; relations, functions and transformations; linear, quadratic, and polynomial functions; exponential and logarithmic functions; trigonometric or circular functions; trigonometric identities; inverse functions and equations, triangles; systems of equations and inequalities; polynomial and rational functions; sequences and series.

COURSE REQUIREMENTS

Prerequisite(s): Yukon University Math 050, or Principles of Mathematics 11, or Pre-Calculus 11, or the equivalent (either one passed at 65%); or the passing of a challenge test for Math 050 with at least 55%.

EQUIVALENCY OR TRANSFERABILITY

Find course transfer at https://www.bctransferguide.ca/transfer-options/high-school-transfer/adult-basic-education/

Yukon University Math 060 is articulated as Provincial Mathematics in the Adult Basic Education system (ABE) in British Columbia and Yukon. For more information see the current year's publication "Adult Basic Education: A Guide to Upgrading in British Columbia's Public Post-Secondary Institutions, An Articulation Handbook."

ABE Provincial Mathematics is deemed equivalent to the British Columbia Ministry of Education course Pre-Calculus 12. For more information see "Adult Basic Education: A Guide to Upgrading in British Columbia's Public Post-Secondary Institutions, An Articulation Handbook" or chapter three of the British Columbia Ministry of Education's "Handbook of Procedures for the Graduation Program."

https://www2.gov.bc.ca/assets/gov/education/administration/kindergarten-to-grade-12/graduation/handbook_of_procedures.pdf

Receiving institutions determine course transferability. Find further information at:

https://www.yukonu.ca/admissions/transfer-credit

LEARNING OUTCOMES

Math 060 covers the learning outcomes and core topics of Provincial Level—Algebra and Trigonometry course of the Adult Basic Education program found in the 2022/2023 edition of the ABE Articulation Handbook at https://www.bctransferguide.ca/transfer-options/adult-basic-education/past-abe-guides/.

COURSE FORMAT

Delivery format

Lecture-based instruction: There will be five 80-minute classes per week. Course content will be covered primarily through lectures with the aid of a self-study textbook/workbook. The instructor sets the schedule, and a schedule will be provided.

Workload

It is expected that this course will require six to ten hours/week of homework and additional reading. It is important to note that the time required for successful course completion will vary by individual.

EVALUATION

Assignments

There are 11 assignments to be completed. The introductory chapters each have two assignments owing to the length of the chapters. Late assignments will be docked 10%; however, assignments cannot be accepted after they have been returned to the class. A student planning to be away on the due date must submit the assignment prior to leaving. If the due date is missed owing to an emergency, an alternate assignment may be given.

Exams

There are three exams covering the contents of the course. Each exam covers two or more chapters. The third exam is a cumulative final exam.

Rewrites

A rewrite for a failing grade on an examination (less than 50%) may be permitted at the instructor's discretion. These examinations will be written no earlier than two weeks after the date of the original examination. The mark of the rewrite will be recorded whether it is higher or lower than the original; however, a maximum mark of 65% will be recorded.

"No Shows"

A student who misses an examination will receive a mark of zero for that examination but may be permitted a rewrite. Exceptions may be made if a student receives prior permission from the instructor or faces an emergency. Some form of documentation of the emergency may be required.

Course Evaluation (by category)

Exam 1	20 %
Exam 2	20 %
Exam 3 (Final Exam)	25 %
Assignments (11)	35 %
Total	**100%**

TEXTBOOKS & LEARNING MATERIALS

Textbook

Stewart, James; Redlin, Lothar; and Watson, Saleem. (2016). Precalculus: mathematics for calculus (7th ed), Cengage Learning; Canada.

Student Solutions Manual (recommended)

Stewart, James; Redlin, Lothar; and Watson, Saleem. (2016). Precalculus: mathematics for calculus Student Solutions Manual (7th ed), Cengage Learning; Canada.

Materials

Writing paper, graph paper, ruler, pencils, and scientific calculator.

Related Course Requirements

If a student plans to use the provision of Zoom classes, they will need to have access to a computer or other device and Internet to do their studies. The minimum specifications for a student device are as follows:

Requirement	Windows-based PC	Apple Mac/macOS-based PC
Operating System	Windows 10	macOS X
Web Browser	Firefox, Edge or Google Chrome	Firefox, Edge or Google Chrome
RAM/Memory	4 GB	4 GB
Storage	5 GB of available space	5 GB of available space

COURSE WITHDRAWAL INFORMATION

Refer to the YukonU website for important dates: www.yukonu.ca/admissions/important-dates

Last day to withdraw or change to audit from winter term academic courses without academic penalty is Thursday, March 9, 2023.

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

ACCESSIBILITY AND ACADEMIC ACCOMMODATION

Yukon University is committed to providing a positive, supportive, and barrier-free academic environment for all its students. Students experiencing barriers to full participation due to a visible or hidden disability (including hearing, vision, mobility, learning disability, mental health, chronic or temporary medical condition), should contact Accessibility Services for resources or to arrange academic accommodations: access@yukonu.ca.

TOPIC OUTLINE

1. **Review of basic concepts of algebra**

   a. the real-number system
   b. exponents and radicals
   c. algebraic expressions
   d. fractional expressions
   e. equations
   f. modeling with equations
   g. inequalities
   h. coordinate geometry
   i. solving equations and inequalities graphically
   j. lines

2. **Functions**

   a. definition of a function
   b. graphs of functions
   c. variation
   d. transformations of functions
   e. extreme values of functions
   f. combining functions
   g. one-to-one functions and their inverses

3. **Polynomial and rational functions**

   a. polynomial functions and their graphs
   b. dividing polynomials
   c. real zeros of polynomials
   d. complex numbers
   e. complex zeros and the fundamental theorem of algebra
   f. rational functions

4. **Exponential and logarithmic functions**

   a. exponential functions
   b. logarithmic functions
   c. laws of logarithms
   d. exponential and logarithmic equations
   e. modeling with exponential and logarithmic functions

5. **Trigonometric functions of real numbers**

   a. the unit circle
   b. trigonometric functions of real numbers
   c. trigonometric graphs of sine, cosine, and tangent functions

6. **Trigonometric functions of angles**

   a. angle measure
   b. trigonometry of right triangles
   c. trigonometric functions of angles
   d. the law of sines
   e. the law of cosines

7. **Analytic trigonometry**

   a. trigonometric identities
   b. addition and subtraction formulas
   c. double-angle formulas

    d. inverse trigonometric functions
    e. trigonometric equations

8. **Systems of equations**

    a. methods for solving systems of equations
    b. systems of linear equations in two variables
    c. systems of linear equations in several variables
    d. systems of inequalities

9. **Sequences and series**

    a. sequences and summation notation
    b. arithmetic sequences and series
    c. geometric sequences and series